SYNOPSIS

ON

Study about the Impact of Malnutrition Treatment Center on Severely Acute Malnourished (SAM) Children their Health status and management through Medicine and Dietary Intervention.

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State of Art:

Nutrition is very important for human health and development and child malnutrition is a public health issue with major consequences for child survival, harming the physical and cognitive development of children and the economic output of both individuals and societies. Children who are undernourished are more prone to suffer from illnesses as adults and to become malnourished themselves. Under nutrition in children is characterized by stunting, wasting, underweight, and micronutrient deficiencies, such as iron deficiency anemia. Over-nutrition in children is defined by overweight and obesity.

In India, **Malnutrition Treatment Centers (MTC),** also known as Nutrition Rehabilitation Centers (NRC)**,** are health facilities that provide medical and nutritional care for children with Severe Acute Malnutrition (SAM). NRC /MTC is designed to be a place where child with SAM, including those with medical issues, are admitted, evaluated, and provided with specialized treatment. They primary focus is on children under five years of age who are suffering from SAM. Children are admitted based on predetermined standard, and receive therapeutic medical and nutritional care, including specialized feeding protocol and supervision. NRC/MTC are often located within community health centers or district hospitals as part of the National Health Mission (NHM).

Nutrition Rehabilitation Centers (NRC): NRC are facility-based interventions that offer nutritional management and medical treatment to children under five who have medical problems and severe acute malnutrition (SAM). Special attention is paid to timely, adequate, and appropriate child feeding in addition to curative care, enhancing mothers' and caregivers' abilities to provide comprehensive, age-appropriate care and feeding practices, and Mothers are given help and counseling in order to identify their child's nutritional and health issues.

There are 1080 Nutrition Rehabilitation Centers (NRC) operational across the country.Children with Severe Acute Malnutrition (SAM) who are hospitalized to these NRCs receive medical and nutritional assistance.

In Jharkhand, malnutrition is a major public health issue. For children under five, SAM is an important preventable and curable cause of morbidity and mortality. The National Health Mission (NHM), Department of Health and Family Welfare, Government of Jharkhand, has set up a network of Malnutrition Treatment Centers (MTCs), a facility-based unit at Community Health Centers (CHCs) and at District Hospitals to manage children with SAM present, in order

to address the enormous case load of children with SAM. For the State of Jharkhand, the Indian government has approved 103 Malnutrition Treatment Centers (MTCs), of which 96 are presently operational.

Under nutrition is one of the most serious health and development problem in India as in other parts of the world. Under nutrition considered as wasting (acute malnutrition), stunting (chronic malnutrition), and deficits in micronutrients (vitamins and minerals).

- Weight-for-age (underweight) – Children with low weight for their age are more prone to a variety of infections than children who weigh more than average for their age. Due to its consideration of both acute and chronic malnutrition, it is a true indicator of malnutrition.
- Height-for-age (stunting) – This is a sign of both linear growth retardation and cumulative growth deficits. Children that are stunted, or short for their age, suffer from chronic malnutrition.
- Weight-for-height (wasting) – This index describes the present state of nutrition and compares body mass to body length. Acute malnutrition affects children who are considered thin (wasted) for their height.

Severely Acute Malnourished (SAM):

Extremely low weight-for-height/length (Z-score < -3 SD of the median WHO child growth criteria), a mid-upper arm circumference < 115 mm, or nutritional oedema are indicators of severe acute malnutrition. Acute severe malnutrition is a social and medical disorder. Children with SAM are much more likely to die, particularly because they are more prone to common illnesses including measles, respiratory infections, diarrhea, and malaria.

- Malnutrition Treatment Centers (MTCs), such as those set up in Jharkhand, offer in-patient medical and nutritional care to children suffering from severe acute malnutrition (SAM), including those who have medical problems, based on WHO
- Child wasting is a major problem in Jharkhand, where a large proportion of children between the ages of 0 and 59 months are severely wasted.
- Stunting and delayed cognitive development are some of the long-term effects of malnutrition, along with weaker immune systems and more susceptible to infections.
- MTCs in Jharkhand provide children with SAM integrated care, including identification, screening, and treatment.

- Complications are treated at a facility while essential medication, vitamins, and nutrient-dense foods that are readily available locally are provided.
- MTCs are regularly open to give caregivers consistency, and they also offer health education to them.

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Services:

- Medical and Nutritional Care: In-patient medical and nutritional care, including the management of medical issues, is provided by MTCs.
- Therapeutic Feeding: Depending on their nutritional requirements, children are given therapeutic foods like F-100 and F-75 in addition to locally made semi-solid therapeutic foods.
- Counseling and Education: Counselors and nurses teach caregivers on hygiene, vaccinations, sickness prevention, and child feeding.
- 24-hour Care and Monitoring: Children receive monitoring and continuous care.
- Sensory Stimulation and Emotional Care: MTCs provide emotional support and sensory stimulation.
- Follow-up: ASHAs (Accredited Social Health Activists) follow up with children after they are discharged.

Through specialized care, such as stabilization, rehabilitation, and addressing underlying medical conditions, Malnutrition Treatment Center (MTCs) significantly improve the health status and management of severely acute malnourished (SAM) children (6–59 months), resulting in lower mortality and higher recovery rates.

Literature Review

Ashworth (2006) According to his research, community-based rehabilitation works, but more focused work is required. The nutritional component is more crucial. Children with severe acute malnutrition need a lot of energy, protein, and micronutrients to stay healthy. The importance of supplemental meals is also mentioned in this study. To preserve children's health, ready-to-use therapeutic foods are more economical and practical. In addition to providing RTUFs at health centers, counseling regarding severe acute malnutrition is also required.

Karanveer singh (2014) According to his research, children with SAM can receive life-saving care from NRCs. However, to assure the complete recovery of every admitted child, the current protocols and therapeutic diets must be enhanced.

Aprameya et al. (2015) showed that insufficient breastfeeding and delayed beginning are the main causes of severe acute malnutrition in their analysis of 91 cases. But in the battle against severe acute malnutrition, Nutrition Rehabilitation Centers are crucial. While nutrition rehabilitation centers are a useful tool for treating severe acute malnutrition, they may use significant enhancements to increase their effectiveness and efficiency. Community health facilities are necessary to lower the high defaulter rate.

Hashmi and Kumar (2016) showed that children with severe acute malnutrition are primarily between the ages of one and two. Additionally, only 26% of children with severe acute malnutrition achieved the desired weight gain. Though not to their full ability, it is successful. Therefore, the Nutrition Rehabilitation Centres effectiveness should be improved.

Mustapha Kabir Musa (2017) - According to his research, MUAC is an excellent screening technique. In order to determine standards and cutoffs for various age groups, MUAC should be regularly assessed as part of the clinical evaluation of all children admitted to hospitals.

D. M. Saxena (2018) His findings conclusively show that early detection of malnutrition is crucial because it can lower the burden of morbidity and mortality in children under five. As a result, the health system should prioritize early detection of malnutrition, and the implementation of such an NRC model of treatment will continue to serve as a useful instrument to effectively and sufficiently address the urgent issue of malnutrition in the community.

Mena et al. (2018) mentioned that three-fourths of the severely acutely malnourished children in their trial recovered, proving that his medication is effective for the condition. They also out that other factors, such as the child's duration of time at the Nutrition Rehabilitation Centres, the inclusion and exclusion criteria for admission, and pneumonia, also had an impact on how well the treatment worked.

Biruk Beletew Abate (2019) Both the medical transfer and recovery rate dropped short of the spherical norm. The following characteristics were found to be strongly associated with the treatment outcome of severe acute malnutrition: the existence of cough, the presence of diarrhea admission category, the provision of amoxicillin, and the immunization status.

Umesh Ghimire (2020) Significantly greater proportions of SAM children in this study were from homes with five or more family members. We discovered that acute childhood malnutrition was independently correlated with the age of the the child and the availability of food in the home. Therefore, raising mothers' knowledge and awareness could be extremely important for enhancing the nutritional health of their children.

Praveen Kumar (2021) – The findings of his study can be applied to neglected communities in rural India where childhood wasting is a major problem. The frequency of SAM in children is extremely high in certain high-burden districts and blocks in India. Through the NHM and ICDS systems, the intervention techniques can be expanded to all or a portion of the high-burden

districts if the primary and/or secondary outcomes of the study are improved by the CSAM strategies of other states.

Ahmed et al. (2022)- Malnutrition continues to be a major worldwide health issue. Undernutrition is more of an issue in emerging and underdeveloped nations than in developed countries. The primary life-threatening ailment in poor nations is severe acute malnutrition. This study suggests that malnutrition is a complex problem that requires a multi-sectoral approach to address. The study also showed that polygamy and inadequate child care are two other factors contributing to severe acute malnutrition.

Hailemariam Mekonnen Workie1 (2025)- He found that the recovery period from severe acute malnutrition was significantly correlated with the number of children in with pneumonia or marasmus. Nine days was the average recovery period for the patients, with most recovering in seven to eleven days.

Problem to be investigated-

The aim of this proposed doctoral research is to study about the impact of a Malnutrition Treatment Centre (MTC) on the health and management of severely acute malnourished (SAM) children aged 6-59 months at the MTC in Chainpur Palamu, Jharkhand. The research will assess the impact of medical and dietary interventions provided by these centers on the health status and recovery of these children. The research will additionally study issues that impact recovery, including socioeconomic factors that affect health, resource accessibility, and adherence to treatment protocol. Additionally, this will assess how well MTCs work to lower mortality, enhance weight growth, and promote general recovery in children with SAM. Micronutrient supplementation, the use of Ready-to-Use Therapeutic Food (RUTF), and the management of medical problems are just a few of the specific medical and nutritional therapies that will be examined in this study.

Motivation-

Researching on the impact of Malnutrition Treatment Center (MTC) motivates me by the urgent need to improve the health and well-being of children with severe acute malnutrition (SAM), particularly in areas like chainpur Palamu, Jharkhand, where malnutrition rates are high. Understanding how effective MTCs are at providing essential care helps to make the most of their use and ensure that the most vulnerable kids receive it. Research can be used to assess how MTCs affect children's long-term growth, weight gain, and death. This information is necessary to evaluate the overall effectiveness of these facilities and make any necessary adjustments.

Objectives of the study-

1. To analyze the impact of MTC on the health status of SAM children age (6-59 months)
2. To evaluate the effectiveness of medicine and dietary intervention provided at the MTC.
3. To investigate the factors associated with effective treatment and recovery of children with SAM.
4. To determine challenges and recommendations that could improve the MTC's performance and results.

Potential Research Questions:

1. How well does the MTC treatment plan work for SAM children aged 6 to 59 months in terms of weight gain and nutritional status?
2. How can the MTC program be further improved to avoid relapse after discharge and enhance long-term results?
3. What is the recovery rate (percent of children meet the discharge criteria) in MTCs?
4. Does the treatment outcome change for children with SAM who have gone through medical issues compared to those who have not?

Research Design & Methodology

Selection of the Area- study will be conducted at the MTC in Palamu chainpur, Jharkhand.

Type of study: A cross-sectional mixed method study design, may be fruitful for assessing the impact of Malnutrition Treatment Centers on Severely Acute Malnourished (SAM) Children age (6 month to 59 month) their Health status and management through medicine & dietary intervention at MTC Chainpur,palamu Jharkhand. In this research, both quantitative data (Weight, height Z score < -3 , using the WHO Growth Charts& mid- upper arm circumference (MUAC) < 115 mm) and qualitative data (observation , interviews) will be evaluated for obtaining deeper & more accurate understanding of the impact and effectiveness of the facility.

Sampling- The sample size will be 200. Samples will be selected by purposive sampling method.

Research tools:

- Patient Records**:** Data about demographics, anthropometric measurements (weight, height, and of the mid-upper arm circumference), clinical findings, and treatment results will be gathered from the medical records of SAM children who were admitted to the MTC.
- Interviews: Caregivers of SAM children will be interviewed to learn more about their practices, behavior, and knowledge about child feeding and health-seeking behavior.
- Observations: Direct observations of the MTC's activities, including the management of nutritional and medicinal treatments, will be conducted.

Variables-

- **Independent variables-** caste, Gender, Age, type of family, mother education, income, nutritional status
- **Dependent variables**- Anthropometric measures like weight, height, and Mid-Upper Arm Circumference (MUAC), biochemical markers.

Sources of Data-Data collection will be done from primary as well as secondary sources

- **Primary Data-** facility-based records, medicines, medical care and data collected from mothers/ carers of admitted children.
- **Secondary Data-** These data will be collected through facility based manuals, training manuals, books, annual reports, journals, journals, social media. The overall prevalence of malnutrition can also be evaluated using data from national surveys, and the results can be compared to the effects of MTC initiatives.

Data Analysis:

The statistical methods to be used for data analysis, including descriptive & inferential statistics to understand the variables. All relevant information will be organized in table and visualized with graphs and diagrams as per the need. All the relevant information will be tabulated, and descriptive statistics such as percentage, mean, range, standard deviation.

Significance of the study-

One of the main causes of child mortality, especially in developing countries, is malnutrition, particularly severe acute malnutrition (SAM). Research aids in assessing the efficacy of different treatment methods including inpatient or outpatient care, the application of particular therapeutic foods, and other treatments. Research analysing MTCs focuses at how they affect significant indicators such length of stay, mortality, morbidity, recovery rates, and following the discharge and follow-up protocols. This data is essential for improving treatment plans and making sure MTCs are offering quality care. Such data can be utilized to prioritize treatments for children who are more at risk and to modify treatment plans.

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Relevance to the study to the present day problem-

The proposed research is highly relevant to the current context , In childrens malnutrition is a serious and persistent global health issue. Malnutrition affects millions of children globally, with stunting, wasting, and underweight being common. Poverty, food insecurity, inadequate sanitation, and limited access to healthcare and nutrition education are frequently associated with malnutrition. Children are more vulnerable to infections and illnesses as a result of its weakened immune system. Additionally, it may result in long-term health issues, cognitive impairment, and developmental delays. Child malnutrition is a serious problem in India, and Jharkhand in particular. Strategies for enhancing MTC programs and increasing access to efficient SAM treatment can be influenced by these findings.

Contribution to the existing knowledge

This doctoral research on impact malnutrition treatment centres for children who are severe acute malnourished (SAM) has greatly improved their long-term health and survival rates. Research has shown that specific nutrient-dense diets, such as ready-to-use therapeutic food (RUTF) and F-75 and F-100 therapeutic milks, are useful in treating SAM. These treatments, when paired with appropriate care, have led to improved survival rates and a decreased risk of complications. This study will contribute to the body of information regarding SAM management and the role

MTC play in enhancing child health worldwide. The study will gather important information regarding the effectiveness of the MTC in enhancing the health of children with SAM.

Future work-

Building upon the finding of this research, Future studies might focus on enhancing the sustainability and efficacy of malnutrition treatment centres (MTC) for children who are extremely acutely malnourished (SAM), especially in regions with a high SAM prevalence and inadequate resources. This involves looking into fresh approaches, solving societal determinants, improving the availability of the health system.Further studies could also focus on many benefits and drawbacks of malnutrition treatment facilities. Researchers can develop ideas for enhancing community based treatments, improving health systems, and increasing access to treatment by knowing the effectiveness and limits of MTC.

Limitations-

- The study is limited to MTC Chainpur, Palamu district only.
- The data will be collected from those who are willingly interested in this study.

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Ref. Reference Category, Statistically significant at $p < 0.05$

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